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ON THE CONTAGIOUS DISEASE OF THE SILK-WORM, AND ITS
ANALOGY TO SYPHILIS IN MAN.

IN the year 1865, Pasteur was instructed by the French Minister of Agriculture, to specially investigate and report upon the diseases incident to silk-worms. During the interval between the years 1853 and 1865, these disorders had reduced the annual production of cocoons in France, from sixty-five to ten millions of pounds. In the admirable work which resulted from his laborious researches,* the author remarks: "Certain disorders of the human race are accompanied by spots upon the skin, which originate in consequence of

various alterations of the intestinal canal. This is not the sole observation applicable to human pathology which the experiments detailed in this work will suggest to the intelligent reader."

Diseases of the higher and lower orders of the animal kingdom are undoubtedly subject to similar conditions, in their genesis, resolution or fatal issue. It is more logical, as well as more consonant with scientific method, to observe the uniformity of a pathological law in the caries of an elephant's dentine, and the gangrene of a spider's foot, than to seek with Huxley for a community of protoplasm between the finner whale and the fungus upon a fly. The ciliae of the vorticella and of the human bronchi are not identical in structure, but they move in obedience to a similar impulse.

* Etude sur la Maladie des Vers A Soie, moyen pratique assure de la combattre et d'en prevenir le retour, par M. L. Pasteur, Membre de l'Institut Imperial de France, et de la Societe Royale de Londres. Paris: 1870. This work is the source from which have been obtained all the facts relative to the contagious disease of the silk-worm, to which reference is made in this paper.

A medical friend once remarked to the writer of these pages, that the periodical visitations and ravages of insects, presented a striking analogy to the recurrence and devastation of epidemic diseases. It is well worth the investigation to enquire if they be not alike dependent upon similar hygrometric and thermometric conditions of the soil and atmosphere.

It is proposed here to point out the analogies which exist between the pebrine of the silk-worm and syphilis in man, not because these analogies might be so interpreted as to indicate that the two disorders have, in common, a parasitic origin. It is because the knowledge we at present possess relative to contagion, is so scanty, that it may be said every new observation of its phenomena, stimulates the belief that that which is unknown and yet knowable, is largely in excess of that which is known regarding it.

Bumstead, referring to this subject in a recent paper,* says:

"The fact is, that a new field for investigation and experiment has been opened, which no one has as yet fully explored, and no one can pretend to understand. The exploration of this field promises to throw light, not only upon syphilis, but upon other contagious diseases, and even to add to our knowledge of the nature of specific poisons in general; but the work is yet undone, and any conclusions at this time are only premature."

It is preferable to select syphilis for the study of the analogies referred to above, first, because it is a disease produced by a tangible virus; and,

second, because of the multiformity of its results. It is possible to secure upon the point of the lancet a drop of matter, which we can prove to be capable of producing all the complications of the disease. This is also true of pebrine. While we have, however, an equal opportunity of isolating the *materies morbi* in vaccinia, variola, malignant pustule, and certain other maladies, the polymorphism of the results produced, is not equally marked as a basis for comparison.

It is, perhaps, proper to admit, at the outset, that the investigations of Professors Stricker and Kobner, have completely exploded the theories of Latorfer, Salisbury, and others, as to the existence and causality of *crypta syphilitica*. We have no additional information which would warrant us in reviving such dead issues. That is not the purpose of this paper. It is here intended merely to exhibit a general agreement between the origin and evolution of two contagious diseases, existing in two widely-separated orders of animals, in order that the classical feature of contagion in an extended area may be better appreciated.

The silk-worm, as is well known, is the larve of the Bombyx Mori, which deposits an ovum, from which, in turn, the caterpillar is produced. The latter, after undergoing four (in some races, three) distinct changes of integument, becomes a pupa, or chrysalis, and surrounds itself with the silk cocoon. From this, lastly, the perfect moth—imago of naturalists—effects its escape. When it is considered that, in a period of between thirty and thirty-five days, the caterpillar increases in size till it becomes eight or ten thousand times larger than the

* Am. Jour. of the Medical Sciences, April, 1873.

newly-escaped larve, it will be seen that organic life is displayed with unequalled activity in its development. Diseases, therefore, cannot but progress, *pari passu*, with an intensity proportioned to the energy of the vital forces.

In the human economy, of what paramount importance to its conservation, are the critical phases of the first and second dentition, the arrival of puberty, and the change of the menopause! In the silk worm, no less than seven equally important crises occur, during a comparatively short interval—the cycle of a brief existence, whose momentous stages offer unusual facilities for the encroachment of disease.

It is to be remarked, if we begin with the earliest phases of the two disorders, that :

1. *Pebrine and Syphilis are alike producible by artificial inoculation.*

Pasteur produced a liquid capable of inoculation, by bruising a diseased worm and mixing the mass with a small quantity of water. A number of worms were selected, carefully examined in order to ensure their soundness, and thoroughly cleansed by washing, so that no germs might remain in contact with the skin. He then made a small puncture in one of the posterior rings of the body of each, and inoculated the wound by inserting into it a needle dipped in the infecting liquid. The wounds readily cicatrized, and nothing but a black or dark colored spot was soon visible in the site of the puncture. Of twenty worms inoculated in this manner, on one occasion, seven became diseased to such an extent as to exhibit from fifty to two hundred of the corpuscles characteristic of pe-

brine, in one microscopic field. The experimenter explains why no larger proportion of successful inoculations was made: "The blood which escapes from the wound does not invariably permit of penetration by the corpuscles which are intended to produce infection." Audoin is said to have observed the same fact in his inoculations. Many an inexperienced physician has failed of successful vaccination for a similar reason.

It should be stated, however, that most frequently pebrine is produced by the ingestion of corpuscular germs, when the worm is feeding upon the mulberry leaf. The corpuscles are then found distributed over the surface of the leaf in debris; and a single repast is said to be sufficient to occasion the disease. It is worthy of note that an intestinal lesion is then produced.

It cannot be doubted that chancres would in like manner result, if, by any natural process, the secretion from similar sores could be applied to the mucous surface of the intestines. But it may well be doubted if this species of infection of the primæ viæ, ever occurs in the human subject. A vacciniculturist of this city, however, once informed the writer that he was in receipt of numerous orders from practitioners of the homœopathic delusion, who desired to secure an infinitesimal quantity of vaccine virus, rubbed up with sugar of milk for internal administration!

2. *Pebrine and syphilis are alike communicable by accidental inoculation.*

Pasteur discovered numerous cicatrices in healthy worms, which resulted from wounds. These wounds were inflicted by hooklets attached to the anterior organs of locomotion, in

those caterpillars with which they had come into frequent contact. These were never seen in isolated individuals. He remarks that, not infrequently, these sharp hooklets, by which the caterpillar is enabled to cling to the leaf upon which it feeds, are inserted into the fæces or integument of diseased worms, and subsequently into the bodies of those that are sound, thus serving to propagate the disease by accidental inoculation. It is evident that there is here, also, the possibility of the production of *mediate* contamination, the *porte-virus* (if it be allowable to coin a suggestive word,) being exempt from infection.

3. *Pebrine and syphilis alike require a period of incubation, before the phenomena of general disease appear.* Pasteur discovered that after accidental or artificial inoculation, and also after the ingestion of disease germs, a period of from ten to twelve days elapsed before external manifestations of pebrine appeared. By feeding a number of larvae, with the solution which has been already referred to, and by killing and carefully examining a fixed number of bodies at consecutive dates, he was enabled to follow the evolution of the disease, and to trace its natural history. In every instance the period of incubation was noted. This is such a constant concomitant of contagious diseases, that it may well be considered essential to their full development.*

4. *The first general indications of constitutional disease in pebrine and syphilis appear as integumentary lesions.* In the course of the experiments conducted by Pasteur, whenever a number of larvae were selected

for inoculation or infection, a similar number, of the same age and habitat were set aside in a healthy condition, in order to serve the purposes of comparison. At the expiration of the period of incubation referred to above, a very sensible inequality was noticeable in these two classes. Those which were left uninfected, displayed unmistakable evidence of greater well-being; while the diseased worms, when examined by the aid of a lens, exhibited numerous excessively small spots or maculæ, hitherto unnoticeable, about the head and rings. These lesions did not at first indicate the presence of the characteristic corpuscles in the skin. The "extension of the latter from centre to circumference had not yet affected the external organs. These surface-spots," says Pasteur, "only occur when the internal skin, if I may be allowed the expression, is affected to such a degree as to seriously interfere with the functions of digestion and assimilation."

Subsequently, however, integumentary lesions were produced which, upon careful examination, were found to contain the pebrine corpuscles. It is difficult to recognize the distinction here established, and not recall the difference between those superficial syphilides, which disappear readily under appropriate treatment, and those which contain a specific morbid product. One instinctively recurs to the theory of Jonathan Hutchinson and others, that the lesions of secondary syphilis are febrile phenomena. These precede the deposits of tertiary forms, in which the "still-born" product of Lancereaux is to be distinguished.

The patches upon the integument

* See *Nowv. Dict. de Med. et de Chi. Fac-coud, Art. Contagion.*

in pebrine are generally of a dark color, sometimes black, (whence the name,) some more and some less clearly defined. The petechial character of this stage of the disease has given it the name by which it is known among the Italians (Petechia of the Silk-Worms). When completely developed, these stains are surrounded by a yellowish areola, which exhibits various gradations in color. Sometimes they constitute the sole symptoms of the disease.

M. Quatrefages, with whose opinions Pasteur is not in complete accord, declares that the alterations, described above, are best studied in the skin of the young larvae. In these he could occasionally descry nothing more than a yellowish tint, slightly obscuring the hyaline transparency of the tissues. Somewhat later, a darker stain became visible, shading gradually into brown, until the translucence of the epidermis was lost. Finally, a brownish-black stigma remained, which was accompanied by a disappearance of all traces of organization. About this, as a nucleus, a yellowish areola extended, which, in his opinion, marked the invasion of the surrounding tissues. This process generally continued until arrested, either by the death of the worm, or by the regular replacement of the old, by a new integument. In the course of two or three days, however, the new cuticle, which at first appeared entirely normal, was in its turn affected by the disease, "proving," says Quatrefages, "that the lesions were not local phenomena, but signs of a constitutional malady, dependent upon a profound cause."

Pasteur has noted that the development of the pebrine corpuscles pro-

ceeds with an unexampled rapidity during these periods of metamorphosis—a circumstance which our knowledge of the laws of pathology would lead us to expect. He disagrees with Quatrefages in the supposition that the integumentary lesions are localized foci, from which a quasisgangrenous process extends to the invasion of adjacent tissue; but considers each stigma to be a resultant of corpuscular development, and the changes in the appearance of the maculæ, not due to molecular death, but to neoplastic hyperplasia.

In addition to the symptoms noted above, certain other indications of disease are described in the adult moth, as, for example, vesicles, varices and bullæ filled with a sanguinolent fluid, under or near the wings. Some of these were observed to burst, and their contents, escaping and drying, were found to form adherent crusts, black and viscous, of the size of a pea.

5. *Pebrine and Syphilis are alike productive of a specific adenopathy.*

The secretion of the silk glands of the pupa has solely contributed to the value placed upon the insect by the commercial world. In a pathological point of view, these glands possess especial importance from the fact that they are rapidly affected in pebrine. The large pentagonal cells which surround the canal where the silk is secreted in a viscous state, exhibit in a diseased condition numbers of oval corpuscles, crowded together, and sometimes collected in such masses that they lend an appearance of hypertrophy to the glandular tissue. Viewed with a low power, they exhibit whitish projections brilliant in color, of oval form, and very clear

definition. They are, without doubt, evidence of the extension of the disease to the visceral organs of the worms: and the total incapacity of the larvae to produce cocoons—those of them, at least, which are profoundly affected—is a proof of the destructive agency exerted by the glandular neoplasms.

In syphilis, not only are those glands affected which are in the chain of the great system of lymphatics, but those which are actively concerned in hæmatopœsis. There is strong reason to believe that, aside from the development of hepatic gummata, usually found in the tertiary stage, one of the earliest symptoms of constitutional syphilis is dependent upon some disturbance of the glycogenic function of the liver. Dr. Charles Murchison has recently concluded,* after reviewing the discoveries of Hoppe Seyler, Bernard, Lehmann, McDonnell, Hirt, of Zittau, Weber and Kolliker, that "the glycogen secreted in the liver cell combines with nitrogen and forms an azotised protoplasm which maintains the nutrition of the blood and tissues." In this light the chloroanæmia of early syphilis is most readily explained—a condition which is constant in all but benign cases, and which constitutes an important indication for successful treatment.

6. *Pebrine and Syphilis are, alike, diseases of the blood.* In a healthy state the blood of the larve is a transparent albuminous fluid—colorless in the case of those races which produce white silk; and golden yellow in those which produce yellow silk. Under the microscope, innumerable spherical bodies appear, of various

sizes, the largest of which does not in its greatest diameter exceed .0039 of an inch. They seem endowed with individual vitality, and continually reproduce themselves during the life of the insect. When the latter is infected with pebrine, the number of the blood globules decreases—thus inducing a species of chloroanæmia—and the albuminous fluid becomes charged with an immense number of minute animated corpuscles .01 of an inch in diameter, increasing in proportion to the disappearance of its normal ingredients. These are the pebrine corpuscles already described, which Pasteur is disposed to regard as the parasitic germs of a species of psorosperm. They are oval or reniform in contour, destitute of cilia, and move rapidly, apparently at will, sometimes advancing and sometimes receding in the vascular channel.

The genus "psorosperm" was first established by Jean Muller, after his observation of certain anomalous organisms in different varieties of fishes, and especially in the fresh-water pike. But certain later expressions of Pasteur seem to imply that his mind is not perfectly clear as to the parasitic character of the germs described by him. In some of his communications to the Academy of Sciences, for example, he uses language from which it might be inferred that the disease originated in generations of the ancestors of these worms, whose connective tissue had undergone a peculiar cell-metamorphosis.

It is well-known that Beale* adduces very strong grounds for the belief that contagious disease germs are not parasites, and his opinions are

* Disease Germs; their nature and origin. Lionel S. Beale. London: 1872.

* Lancet, June, 1874.

largely the result of researches upon the subject of the cattle-plague. Let it be supposed, in accordance with his views, that the corpuscles described by Pasteur are bioplasts—contagious living disease germs—that they are the descendants of blood or tissue bioplasts; that subsequently, either by hyper-nutrition or retrogression, they have undergone a conversion of energy, and become powerful to self-multiply indefinitely, and powerless to build up new and normal structures. This would explain the amoebiform movement of the pebrine corpuscles, their contagiousness, their virulence and their destructiveness. Not only so, but it would do away with the need of resorting to a novel species of parasite, in order to explain the phenomena. It should be stated in this connection, that Beale considers the observations of both Pouchet and Pasteur open to objections upon the ground of their employment of very low powers. Many of the germs figured by Beale were viewed with an objective of one-fiftieth of an inch focal distance, enlarging the dimensions of these organisms two thousand eight hundred diameters.

In such a field as this, speculation is illusory, and scientific deductions are alone to be desired. Still the general trend of the exposed strata is in one direction. They to whom the conservation and transmutation of forces is an unalterable fact of physics, have no difficulty in believing that there is a similar law to which the vital forces are subject. Heat, light and electricity are shown to be modes of motion—interchangeable and intercurrent. The day is, perhaps, not far distant, when it will be

clear that contagious and other diseases, which betray themselves by structural lesions, depend upon the mode of motion of the bioplast. This motion is known to be the measure of its energy. Can we not even declare that it is the essential condition of its vitality? Motionless bioplasm is dead. The transmutation of a normal to an abnormal energy should, therefore, produce disease and ultimate death. If this can be shown, it will be apparent that by an inversion of this process, restoration from disease occurs.

Guerin-Meneville, in a report to the French Agricultural Society in 1849—mark the date!—gives expression to the same general thought. "It seems clear to me," said he, "that these granules (pebrine corpuscles) are the elements of new blood globules, normally produced and launched into the vascular currents of healthy worms; but in pathological conditions they lack certain essential elements, and are therefore arrested in the progress of development."

Pasteur describes the mature corpuscles as brilliant of refraction and ovoid in shape. They subsequently become pyriform, surround themselves with a double envelope, and exhibit a slight flattening at the narrower extremity. They contain granules, either free or adherent to the cell wall, and these, he believes, after their exit by rupture of the cell envelope, serve as new centres for the development of new corpuscles, and thus extend the disease. The tissue of these organisms was supposed to contain sarcodæ.

7. *Pebrine and Syphilis are hereditary disorders.* The transmission of

the disease of the silk-worm from one generation to another, has been the most fruitful source of evil in the propagation of the species. Unfortunately, before the microscope had been employed in the study of the malady, sericulturists could not be persuaded to believe that apparently healthy ova from parents of equal apparent health, contained the seeds of the devastation which had blasted their hopes of profit for the preceding year. Such, however, has been too frequently the case; and the success of Pasteur in totally eliminating the disease from those nurseries in which his method was pursued, was due to his recognition of this fact. It is not a little remarkable in this connection, to observe that:

8. *In Pebrine, as in Syphilis, when one parent only is affected with the disease, healthy offspring may be produced.* This general fact was demonstrated by a great number of experiments upon the coupling of moths, in which there was undoubted evidence of corpuscular disease either of the male or the female. It appeared, also, from these experiments, that ova entirely sound were generated occasionally by males who exhibited very extensive traces of the malady, when assorted with females who, while they were indubitably infected, yet exhibited very few of the pathognomonic lesions of pebrine. The experimenter explained these circumstances by the conditions incidental to the chrysalis. If the latter became infected with pebrine so as to exhibit corpuscles very soon after the formation of the cocoon, the moth and its ova were almost certain to be similarly diseased. But if this development did not occur until near the

time for the escape of the imago, then the ova of the moth might be entirely sound. In the case of the syphilitic ovum, similar results are said to be declared, according as infection occurs early or late in uterogestation.

Other analogies between these diseases obviously exist which might be in turn the subject of comment. Such, for example, are the involvement of the nervous system and centres in each—the infecundity of infected females who are liable to sterility and the production of blighted germs; the non-inoculability of the infectious matter obtained during the later stages of each disease, and the liability of each to complication by the advent of other maladies.

It should be stated that Pasteur himself is disposed to regard pebrine as analogous to pulmonary phthisis. But he is careful to announce that in establishing a resemblance between the facts which he has observed and those relative to diseases of the human race, he does not speak as an expert.* The hereditary influence of phthisis seems to have attracted his attention to this subject.

But there are many objections to this view founded upon the clinical history of tuberculosis. This latter disease is neither infectious, contagious nor inoculable.† Nor does it

* "Je desire toutefois que l'on sache bien que je parle en profane, lorsque j'établis des assimilations entre les faits que j'ai observés et les maladies humaines." T. 2 p.

† Bouillaud states that, "the tuberculous virus is an hypothesis which up to the present time rests upon no exact nor trustworthy observation; and there does not exist a single instance of tuberculosis of the lungs, or of any part of the body, being produced in the human species by means of specific (viru-

produce a pathognomonic cutaneous lesion.

It is true, as stated by Pasteur, that children born of phthisical parents, may, in some instances, merely become more or less sickly, while in others tubercle may be developed in different degrees at various ages. But one has not to consult the statistics of consumption in order to establish this diversity in the evolution of hereditary disease. Congenital syphilis may infect the ovum, the fœtus at term, and the infant newly born or which has survived for weeks and months. But this is not the limit of its effect. Massa narrates cases in which the disease was developed between three and eleven years of age; Balling, similar instances at the age of sixteen; Rosen, at eleven;

lent) inoculation." As to contagion, the experiments of Erdt, Villemin, Simon, Herard and Clarke have been shown by Lebert, Nyss, Sanderson and Fox, to demonstrate merely the irritative character of subcutaneous injections of putrid matter.

Baumes, at four; Cazenave, at eighteen; Fournier, at twenty-five; Zambaco, at twenty-six.* Other authors cite cases which illustrate the same point. In the face of these observations who will venture to say: "Thus far doth it come, and no farther?"

In concluding the consideration of the general subject here discussed, few will refuse to concur with the opinions expressed by Dr. William Aitken. "The diseases of the lower animals," says this author, "rarely form any part of the study of the student of medicine. The diseases of plants are almost entirely neglected. Yet it is clear that until all these have been studied, and some steps taken to generalize the results, every conclusion in pathology regarding the nature of diseases must be the result of a limited experience from a limited field of observation."

J. N. H.

* Lancereaux; *Traite de la Syphilis*. Paris: 1866.

DRUNKENNESS AND INSANITY.—

The last English census report says that it has been established by the observation of many authorities that intemperance is the most prolific cause of insanity, especially among the working classes. To the cases of madness resulting from habits of drunkenness on the part of the individuals themselves must be added the numerous instances in which persons owe their insanity to the intemperate habits of their parents. It is

said that the fruitful source of mental disease, hereditary taint, insanity inherited from parents, is fostered by the insane being allowed to propagate their kind with scarce any effort to check so deplorable an event. Large numbers of the insane and the idiotic still remain at home, or are "boarded out," and become in many instances the agents of extending the fell malady through their offspring.—*Philadelphia Med. and Surg. Reporter*.

Translations.

ON THE LOCAL TREATMENT OF PULMONARY CAVITIES.

BY PROF. F. MOSLER, OF GREIFSWALD. A RESUME OF THE AUTHOR'S VARIOUS REPORTS BY THE EDITOR OF THE ALLGEMEINE WIENER MED. ZEITUNG.

Translated for THE EXAMINER by DR. H. GRADLE. Continuation from June 1st, No. XI.

THE exuding pus became constantly less in quantity, and of a more laudable nature; whence Mosler concludes that this method of disinfection is of greater efficacy than inhalation of carbolic acid per orem. By percussion the cracked-pot resonance was now more distinctly perceived over the cavity, probably on account of its external opening; the mucous rales, however, were less marked. The patient made no complaints about trouble with his lungs. The subjective condition improved after the operation, while the destruction of the lung seemed to have been arrested. An improvement, however, of the general health was not observed, nor, indeed, expected. The albuminuria increased constantly, the constitution being accordingly weakened, so that finally the patient could not leave his bed.

This comprises the reports which Mosler made at the last congress of naturalists at Wiesbaden; his deductions we will refer to, later.

When Mosler returned to Greifswald on the 1st of October, 1873, he found—as he reports in the *Berl. Klin. Wochenschrift*—a change for the worse, as the debility had increased in spite of tonics and stimulants,

while albumen appeared in still greater quantities in the urine. Emaciation was very marked; appetite and bowels were normal; pyrexia was not present. The temperature was neither in the morning nor evening higher than 37.6° C. (99.6° F.); the cough had diminished, the sputa also, while the pus flowed still freely through the canula, on account of which inhalations of a diluted solution of carbolic acid were continued twice daily. The physical examination showed no great change; the destruction had evidently been arrested. Respiration had been but little disturbed so far, but occasionally there was a sense of fullness in the epigastrium. A notable exacerbation set in on October 3d; cardiac activity became enfeebled, and signs of collapse appeared; the temperature sank to 36.6° C. (97.8° F.), and dyspnoea occurred. On the evening of October 5th death from cardiac paralysis closed the scene.

The autopsy revealed the following condition: The left lung well retracted; the pleural layers of the right side completely adherent to each other; the left lung adherent at the apex, less along the posterior part of the lower lobe. On section, both the

upper and lower lobes were shown to contain air; in their substance grayish-white nodules, partly discrete, partly arranged in circular groups, were found in small number. The mucous lining of the bronchial tubes was not altered. The right lung was adherent to the costal pleura in its whole extent, especially above the third rib. On removing the costal pleura, there was found, from the apex to the base of the upper lobe, a whitish pseudo-membrane of almost cartilaginous consistency, several lines in thickness. On the lower anterior part of the upper lobe, a canal with smooth edges was noticed, running in an upward antero-posterior direction (corresponding to the site of the canula) which led to a cavity occupying the greater part of the upper lobe, and filled with a yellow, creamy fluid. The interior of the cavity was traversed by septa of a reddish hue, contrasting with the dark gray color of the smooth walls. On some partitions the surface appeared feebly granular. From a section of the lower lobe there exuded on pressure a reddish watery fluid. Here also a small number of gray nodules, of the size of a millet seed, were seen, arranged as before stated. The heart was not much altered, its muscular tissue feeble and of a brownish color. The spleen and both kidneys showed distinct amyloid degeneration, likewise the villi on the interior of the ileum and jejunum; in some places the mucous membrane of these organs was denuded.

From the statements made at the congress of naturalists at Wiesbaden, Mosler concludes that the local treatment of pulmonary cavities is a practicable procedure.

The first suggestion in this line was made by Barry in the year 1726, and again thrown out subsequently by Nasse, Von Herff, and Hooker, without leading to a trial of the operation, since objections were constantly raised on account of the difficulty of a diagnosis and the obstacles to the performance of the operation; the immense progress, however, of medicine and surgery in the present time has overcome these obstacles. As regards the ultimate success and permanent value of the operation, views will differ, but a tolerance of modifications of the method can and ought to be expected. The above cases have at least proven that even as a symptomatic remedy the method is not without advantage. Whether the local treatment induces granulation, and consequent obliteration of the cavity, Mosler does not dare to decide before further observations have been made. At least this has been proven by his experiments, that the lung is much more tolerant of operative procedures, and that these are much less dangerous and difficult, than was formerly supposed.

As further proof of their innocuity, Mosler can state that since even limited pleuritic exudations are removed by aspiration in his clinic, it has happened occasionally that the trocar entered a pulmonary infiltration, instead of a pleuritic exudation, without injurious consequences to the patient. Similar observations were also communicated to the author by other physicians. Possibly we may even have the courage, at some future time, to treat pulmonary infiltrations, as other parenchymatous tumors, by injections of medicines.

Editorial Department.

HARD TO PLEASE.

TO a liberal, earnest mind, accustomed to work, and manfully striving to make the world better, few things appear more contemptible than a *chronic fault-finder*, or a self-complacent *Pecksniff*. The leading editorial in the *Philadelphia Medical Times*, for June 27th, forcibly reminds us of the union of both these characters in one person. The article relates to the American Medical Association, which it derisively calls the "*redoubtable organization*." And after alluding to what the writer calls "remarkable statistics," presented by Dr. Sayre, of New York, in the Surgical Section, he continues: "Leaving out of sight this matter, the Detroit gathering does not appear to have yielded any scientific fruits whatever." Of course not. There were only eight or ten well-written papers presented and discussed in the Section on Practice of Medicine, Materia Medica, and Physiology; as many in the Section on State Medicine and Public Hygiene; half that number in each of the Sections on Obstetrics and Surgery, including such writers and teachers as Gross, of Philadelphia; Sayre and Beard, of New York; Moore, of Rochester; Dunlap, of Ohio; Morris and Howard, of Baltimore; Bell, of Brooklyn; Parvin, of Indianapolis, etc. What a pity that some of these gentlemen had not be-thought themselves to have quoted,

at least, one line from the editorial department of the *Philadelphia Medical Times*, and thereby given the Detroit meeting some slight aroma of "scientific fruit." The following, however, is the most remarkable paragraph in the editorial of the *Times*: "For the sake of *our* foreign contemporaries, *we* want to deny emphatically that the convocation was in any true sense representative of the American profession. We do not in any way wish to disparage our Western brethren, but it is a simple fact that by far the largest portion of the leading minds of the profession are to be found in our Eastern cities. The most influential periodicals, with a very few exceptions, are there issued; the American medical works almost all have such nativity; the chief medical schools of the country are there situated, and the facilities for higher medical self-education, for study and investigation, do there most abound. Yet, at the late meeting, these cities were scarcely represented at all. Boston, we are informed, sent one delegate; New York thirteen, and Philadelphia nine. Moreover, with very few exceptions, these representatives were not men of prominence at home—excellent physicians, no doubt, but not writers, teachers, or practitioners of national reputation."

How kind, how very considerate,

this Philadelphia editor is, to let his "foreign contemporaries" know that an association in which the prominent actors were such obscure men ("excellent physicians, no doubt,") as J. M. Toner and J. J. Woodward, of Washington; S. D. Gross and Washington Atlee, of Philadelphia; John Morris and E. L. Howard, of Baltimore; A. N. Talley, of Charleston; J. Marion Sims, A. N. Bell and L. A. Sayre, of New York; E. M. Moore, of Rochester; J. P. White, of Buffalo; J. B. Johnson and A. H. Gregory, of St. Louis; J. A. Murphy, of Cincinnati, and W. K. Bowling and W. T. Briggs, of Nashville, was in no "true sense representative of the American Profession." How thankful "our foreign contemporaries" ought to be, that we have, at least, one editor in America who is kind enough to prevent their being imposed upon! But will not J. B. Lippincott & Co., publishers of the *Medical Times*, please inform us in the next issue of that most valuable journal, *who* its editor is? For we, out in the "*Far West*," are not sure that it would not be best to raise a subscription in the Mississippi Valley, sufficient to pay the traveling expenses and hotel bills of said editor, and induce him to attend the next meeting at Louisville, so that Philadelphia may have a representative worthy of the *Emporium* of Medical Science, and the American Medical Association may present in some small degree a "true representative" character. We have no doubt but the "Western brethren" would subscribe liberally for this purpose; and if the journey should appear to be so "far West" as to frighten the learned gentleman, they would hire some

good, motherly lady to accompany and take care of him, especially while crossing the more rugged parts of the Alleghany Mountains.

WISCONSIN STATE MEDICAL SOCIETY.—The regular annual meeting of this Society was held in Janesville, Wis., on the 16th, 17th, and 18th of June. Dr. Waterhouse presided, and the Profession of the State appeared to be well represented. A goodly number of papers were read, and topics of interest discussed, indicating a spirit of active inquiry creditable to the profession of the State. Dr. Henry Palmer, of Janesville, furnished the Society a very pleasant social entertainment at the Myer's House, which was highly enjoyed by about two hundred guests.

Papers or reports on the subject of medical education were read by Drs. D. Mason and J. B. Whiting, both advocating the exaction of a higher standard of education for medical students and practitioners. The Wisconsin State Society has taken the right position in regard to the preliminary education of medical students, and has a Board of Censors for the examination of such young men as propose to enter upon the study of medicine. It is not proper for any member of that Society to admit a student into his office without sufficient evidence of a fair general education. We hope the time will soon come when the profession in every State will adopt and strictly enforce a similar rule.

The officers elected for the ensuing year are as follows:

President, Dr. Reeve, of Appleton;
Vice Presidents, Dr. E. W. Bartlett

and Dr. L. D. Armstrong; *Secretary*, Dr. Theron Nichols, of Milwaukee; *Assistant Secretary*, Dr. Wm. Fox.

AN OVERLOOKED SOURCE OF BLOOD-SUPPLY, FOR TRANSFUSION IN POST-PARTUM HÆMORRHAGE.—Dr. William Highmore, writing to *The Lancet*, calls attention to the use, for purposes of transfusion, of the blood

which has escaped from the open uterine vessels. By collecting and defibrinating this blood, and warming it to the requisite temperature, it may again be returned to the circulation of the patient, and enable the attendant to save a life in cases where an equally good source from which to obtain a supply of blood, does not exist.—*Med. Record*.

Society Reports.

CHICAGO MEDICAL SOCIETY.

REGULAR SEMI-MONTHLY MEETING JULY 6, 1874.

Reported by Will. T. Montgomery.

THE Chicago Medical Society met, as usual, in the parlor of the Gault House. The President, Dr. Quine, in the chair. The Secretary being absent, Dr. Graham was elected Secretary *pro tem*. Dr. Strong related the following case: A young lady, nineteen years old, had been well until about one year ago, when she began to feel a stiffness in the calves of her legs. At that time she had to walk a considerable distance in order to reach her school, and thought at first that the trouble arose from this circumstance, but soon inflexibility and contraction of the joints supervened, and locomotion became impossible. Dr. Strong first saw her about four months ago. He found a large, flabby, and fleshy patient, with legs firmly flexed upon the thighs, but with no bony ankylosis of the knee joints. By persistent effort he was able to extend the legs to an angle of about

forty-five degrees. He was not able to find the tendons of the hamstring muscles, but found a firm cord in the centre of the popliteal space, which appeared to be composed of the united tendons. There was considerable œdema of the feet and legs, which seemed due to the dependent position. Sensibility was perfect. The patient had not had any pain, and no tenderness existed along the spine. Appetite and sleep were normal, and she stated that she felt otherwise well. Menstruation had begun at sixteen years of age, and had regularly continued up to two months before the date of examination. Tonics, stimulating liniments, and passive motion were ordered, but with no improvement of symptoms. Dr. Mary Thompson suggested pelvic cellulitis as the probable cause of the trouble. The President thought it probably depended upon some lesion

of the lower portion of the spinal cord. Dr. Strong thought, if the trouble had come from cellulitis, the patient would have experienced pain. The President referred to a case of cellulitis in which there had been very little pain. Dr. Stillians reported the case of a young lady twenty-one years old, who had been sick since she first began to menstruate, seven years ago. She had been under treatment most of this time, but he did not see her until within the last ten weeks. He found her apparently well nourished, but complaining of pain and stiffness in one knee, and general hyperæsthesia of the integumentary surface. She was vomiting, and able to retain certain kinds of food only. He prescribed anti-emetics and extended the limb, but finding this treatment inefficacious, he began, three weeks ago, the use of tonics and electricity. The vomiting had ceased and the patient had been able to walk, but had had a hacking cough with anorexia for the last four days. The speaker was disposed to consider the ailment hysterical. Dr. Paoli agreed with the latter opinion, and recommended the use of assafœtida and valerian.

Dr. E. F. Ingals reported a case of epileptiform neuralgia with tonic muscular spasms. He had been called about midnight, June 24, to see the patient, who was about twenty-one years of age. She had been suffering from severe cramps of the arms, legs, and stomach for three or four hours. He found the patient in bed, apparently suffering but little, and was told she had improved much within an hour. Upon inquiry, he learned that she had been suffering from occipital neuralgia of a not very

severe type for several days, the pain commencing late in the afternoon and continuing three or four hours. The patient stated that during the previous afternoon, the pain had been more severe than usual, and had been succeeded by chilly sensations of the feet and legs, followed by cramps, affecting also the hands and, finally, the stomach. Upon examination he found the skin cool and moist, the pulse slightly accelerated, the pupils normal, and the tongue slightly coated. No vomiting nor purging had occurred, though the bowels had been evacuated with paroxysmal abdominal pain. He prescribed one-quarter of a grain of the sulphate of morphia and ten grains of hydrate of chloral, to be repeated once in three hours if the convulsions returned. The next day moderate cephalalgia and muscular soreness remained. The spasms did not return during the night, but the patient slept little. About a year ago the patient had occupied a damp basement with poor sewerage, from which she had been finally induced to remove, though not until an obstinate intermittent neuralgia, for which she had been treated, had yielded. At that time quinine and iron utterly failed to give relief, which was afforded by the use of granules of one-sixteenth of a grain of sulphate of strychnia, given three or four times daily. Subsequently she had enjoyed good health until her present illness. Careful inquiry revealed the fact that the old attack had been preceded by tonic convulsions similar to those of the present illness. Remembering the former treatment, he at this second visit, notwithstanding the convulsions, prescribed the strychnia in

granules of one-sixteenth of a grain each, four times daily. That evening, about 5 o'clock, convulsions of the extremities and maxillary muscles again occurred, and lasted about three hours. He called at 5 P. M. the following day, and found the patient feeling very well, without headache and pain, and with some appetite. He congratulated himself that convalescence had been established, but in about half an hour after his visit the convulsions returned in a severe form. When examined at 9 P. M. the hands alone were affected, the fingers being firmly flexed by tonic muscular contraction. Suspecting that the medicine had occasioned the relapse, he instituted inquiry and found the druggist had made pills instead of furnishing the granules ordered. Morphine and chloral, as before, were substituted for the strychnia, and on the 27th inst., he ordered half a grain of the valerianate of zinc at a dose, made into a pill with confection of roses to be given three times daily. Convulsions milder than before, occurred that evening. Two days later he found the patient comfortable. She had escaped pains and cramps the previous evening. What was the cause of this sudden cessation of neuralgic pains and the accompanying convulsions? "The valerianate of zinc" would be the answer, he thought, of nine out of ten physicians; but he found that the patient had not taken this medicine, owing to a misunderstanding on her part. A few doses, however, had been taken, but not sufficient to account for the relief. Two days later he found her still improving, and not suffering from convulsions. He ordered the medicine continued for a day or two

in doses of one grain, to be followed by a ferruginous tonic. The doctor remarked that the case seemed interesting, in the first place on account of the convulsions attending an otherwise simple case of intermittent neuralgia. The first question occurring to us is: what caused the convulsions? Doubtless the same cause operating upon the cerebro-spinal axis produced convulsions which had formerly caused occipital and abdominal neuralgia, but what the exact nature of this cause was, he was unable to say. The patient was neither of a rheumatic nor gouty diathesis. She had not been exposed to lead poisoning, and could not be properly called anæmic. The pains were distinctly intermittent, and so one might expect malaria. But when we remember that many nervous affections, not dependent upon malaria, exhibit an intermittent character, we are still left in doubt. He said it seemed to him as unphilosophical to call every intermittent affection malarial, as to commit the common blunder of calling every disease rheumatic or syphilitic from which the patient recovers while taking iodide of potassium.

In the next place he wished to call attention to the use of sulphate of strychnia in doses of one-sixteenth of a grain. Whether in this instance the druggist had been accurate in its preparation was a matter of doubt. He believed that ordinary drug clerks were hardly competent to dispense such active medicines in pills or powders, and, therefore, when granules, prepared by experienced pharmacists, could not be obtained, strychnia should be given in solution, notwithstanding its intense bitterness. With regard to the dose, standard authors

vary from one-thirty-secondth to one-eighth of a grain, but they are not always safe to follow. He believed one-sixteenth to be too large a dose to begin with, and should not have employed it in this case had he not known the patient's previous history; even though he had himself taken one-sixteenth of a grain three times daily without injurious results. He had in mind a patient suffering from hemiplegia, who for several weeks took about one-half of a grain three times a day, but finally had severe convulsions, which immediately subsided when the medicine was suspended. His preceptor once saw a lady who evidently died from the effects of strychnia administered in doses of one-twentieth of a grain three or four times daily for several days. He believed this remedy possessed a cumulative action. That is, while a given dose might be taken for a considerable time without ill effects, exactly the same dose might prove toxic. By this he did not mean the same dose from the bottom of a bottle containing a solution of strychnia which might be much stronger than that taken from the top; but the same dose of the medicine itself. His experience with the valerianate of zinc in this case was purely homœopathic, but to him it suggested another caution against jumping at conclusions with regard to the action of medicine. If the patient had taken the medicine before the convulsions ceased, the one out of ten who presumed to doubt its effects would, at least, have been thought presumptuous.

Dr. C. M. Fitch thought a patient who had once taken an overdose of strychnia remained more susceptible to it for a long time. He had given

a patient, who had once had an overdose, one-sixtieth of a grain three times a day, and after a few doses similar effects were produced. Dr. Quine had not been a believer in the cumulative action of medicines, and thought the trouble in most cases was brought about by giving medicines faster than they were eliminated. He thought this was true of strychnia. He agreed with Dr. Fitch in reference to increased susceptibility. Dr. Pierson had given strychnia to a patient who had become alarmed and presented symptoms of poisoning, but when he subsequently gave it in the same dose disguised, it had had no bad effects. Dr. Strong had once given a patient with Bright's disease two doses of strychnia of one-thirty-secondth of a grain each, and the last dose was soon followed by convulsions simulating those produced by it. The patient died on the next day. He was not sure whether the convulsions resulted from the medicine or uræmia. Dr. Taggart had often prescribed strychnia in one-sixteenth of a grain doses, but had not seen any ill effects from it. Dr. Earle had recently seen a patient, a hard drinker, who, with suicidal intent, had taken four hundred grains of chloral hydrate at once, without the desired effect. The following night he took what was purchased for ten grains of sulphate of morphine, and made another failure. The patient had not been addicted to the use of opium, but as the chloral did not kill him, the doctor thought he had taken ten grains of morphia with impunity. Dr. Knox once prescribed four hundred and eighty grains of chloral in solution for a case of delirium tremens, and the patient had

taken it all in one night without any apparent ill effects. He thought the alcohol antagonized its action. Dr. Earle reported a case of post pharyngeal abscess, consequent upon scarlet fever.

Dr. Fitch presented a specimen of polypoid tumor of the uterus, which he had removed from the patient of another physician by means of the galvano cautery. The tumor began to appear about one year ago, and the patient had since suffered at times from excessive and well-nigh fatal hæmorrhage. The tumor was at-

tached high up in the cervical canal by means of a short, thick pedicle, and at the time of its removal it was nearly as large as a goose's egg, and of a dark red color. The loop of wire was passed around the pedicle of the tumor, and heated by means of nine large-sized Bunsen cells. The incision was as smooth as if it had been made with a knife. No hæmorrhage followed, and the patient went on to a rapid recovery. After some discussion as to the nature of the tumor, the Society adjourned.

Gleanings from Our Exchanges.

THE OPERATIVE TREATMENT OF PLEURAL EFFUSIONS.

READ BEFORE THE PHILADELPHIA COUNTY MEDICAL SOCIETY, MARCH 25, 1874. BY WILLIAM PEPPER, M. D.

From the Philadelphia Medical Times.

IN announcing that I should this evening present a few remarks upon the subject of pleural effusions, I have felt that it would be desirable to pass over the somewhat theoretical questions which may be raised about the diagnosis of these effusions, and to limit my remarks to the more practical and interesting point of their treatment. * * * But few distinct clinical histories remain to us from the earlier days of paracentesis; but doubtless, to judge from the difficulty which even now attends the diagnosis in some cases of pleural effusion, our bold forefathers must have made many a "dry tap."

The more recent history of the operation is somewhat curious. Despite the many instances in which it

was known to have been successfully employed, despite the improvements in the mode of operating, and the vast improvement in our power of determining the exact location and extent of the effusion, paracentesis continued to be regarded as a daring operation, to be performed only under conditions of urgent danger. It is true, when Lænnec announced his immortal discovery, he did not fail to perceive the bearing which physical diagnosis had upon the operation under discussion, and he asserts "that paracentesis will become much more common and much more useful in proportion to the diffusion of the employment of mediate auscultation." That this prediction was not more speedily verified is to be explained by

the fact that there was still wanting a clear analysis of the clinical symptoms which furnish the chief indications for the operation, as well as the sole guide in the prognosis of its results.

The great credit which is due to Trousseau in connection with paracentesis is, then, undoubtedly this, that in 1843 he for the first time gave a clear and impressive account of the precise indications which call for the operation, while at the same time he simplified the operative procedure, and, by his great success in repeated instances, confirmed his precepts by the most extended practice. Becker, Schuh and Skoda had, a few years previously, published valuable memoirs, which anticipated most of Trousseau's conclusions; but it was reserved for this latter teacher, by his firmness and eloquent advocacy and brilliantly successful employment of paracentesis, to bring the operation into the high favor which it has since enjoyed. On the continent of Europe, its discussion has been ever since "the order of the day;" and in England it has been frequently advocated and performed.

In America, despite the valuable memoirs of Bowditch, published over twenty years ago, the operation has apparently never been so popular and generally practiced as abroad. It may, therefore, not be deemed inappropriate if I give a brief sketch of the operation as it is performed by different operators, and as I have myself frequently employed it. * * *

The first method to which I shall allude may be called that of Trousseau, although the chief peculiarity, the valve in the canula, was the introduction of Reybard (*Gaz. Med.*, January, 1841). As described in his work on Clinical Medicine (Syd. Soc. Trans., vol. iii, p. 270), the apparatus consists merely of a bistoury, with which an incision is made through the skin at the point to be punctured, and a common trocar, the lips of which are surrounded with a gold-beater's skin which is softened by being wetted. When gold-beater's skin cannot be obtained, a piece of the

intestine of a fowl, rabbit, or cat, or a bit of bladder, will serve the purpose of forming a valve which will allow the fluid to flow out during expiration, whilst during inspiration it rests in exact apposition to the expansion of the canula and prevents the entrance of air to the chest.

A modification of this method, which I have employed in many cases with entire success, is as follows: A piece of thin India-rubber tubing is attached to the canula, and the trocar is passed through the tubing before entering the canula. The free end of the tubing is placed in a vessel containing a little water. After the puncture has been made the stylet is withdrawn, the minute hole in the elastic tubing instantly closes, and the fluid escapes into the vessel, the water of which effectually prevents any return of air during the interruption of the flow of the fluid.

* * * I have already alluded to the fact that so long ago as the time of Scultetus the use of a syringe was recommended to exhaust the portion of the effusion which was below the level of the external opening. Lænnec advised the use of a cupping-glass and exhausting-syringe, with the view of draining off the last remains of fluid and of facilitating the expansion of the lung. But more recently, greatly improved suction-pumps or aspirators have been devised. Among these, the apparatus devised by Bowditch deserves prominent mention. And still more recently, Dieulafoy has modified the syringe by introducing a stopcock between the nozzle and the chamber, so that the latter may be exhausted, and then, after the point of the trocar is buried beneath the skin, the vacuum may be brought into connection with the cavity of the needle and the point be endowed with a spontaneous power of suction.

He has also devised a modification by which a vacuum is created in a graduated jar, and the cavity of the needle brought into connection with this, so that the amount of fluid withdrawn can be directly observed. This lat-

ter form has the disadvantage that in case of large effusions it is necessary from time to time to detach the receiver (which contains about twenty fluidounces), empty it, renew the vacuum and re-attach it. Where the collection of fluid to be withdrawn is small, and particularly if it be also offensive, this instrument enables you to remove it without exposing it to the atmosphere at all.

In attempting to estimate the relative advantages of these various methods, I would not be understood as disparaging the merits of any, whilst at the same time I would raise my voice against the unquestioning, unmeasured laudation which has been bestowed in many quarters upon Dieulafoy's apparatus. The sole object which is to be accomplished by paracentesis is the withdrawal of the effusion without permitting the entrance of air. In considering which of the above methods best secures this purpose, it is to be first observed that they all provide effectually against the possibility of the entrance of air during the withdrawal of the fluid. Let us ask, in the next place, by what forces the removal of the fluid is to be accomplished. In employing either of the two first modes, where a simple puncture with a guarded canula is made, there is no external power whatever employed. The forces which expel the fluid are—1, gravity, which leads so much of the effusion as is above the level of the external opening to escape, in seeking its level; 2, the tendency of the chest-wall, which has been greatly stretched, and of the adjoining viscera, which has been displaced, to return to their normal limits, by expelling a portion of the effusion; and 3, the centrifugal pressure of the expanding lung.

It is further evident that the first force, that of gravity, will be able to operate directly in proportion to the activity of the two latter elements, since, if the lung be entirely non-expansive, the chest-wall rigid and inelastic, and the dislocated viscera fixed in their morbid position, there

will be little or no escape of fluid. In other words, the rapidity and the extent of the withdrawal of the effusion are measured by the promptitude and degree of the return of the viscera to their normal condition. It will therefore always be observed that the fluid, which at first flows in a steady stream, soon begins to escape by jets corresponding to the movements of respiration.

On the other hand, in the employment of either of the two later methods—Bowditch's syringe, or Dieulafoy's aspirator—we bring to bear an additional power—that of the suction of a vacuum. In regard to the aspirator, it must be remembered that it possesses one virtue peculiar to itself, and which gives it a high diagnostic value. As there is constantly the full suction-power of the vacuum at the end of the needle as it is pushed through the tissues, it follows that the instant the fluid is reached it will be seen to enter the chamber of the syringe. Whereas, it is quite possible that, in case of a comparatively thin layer of fluid included between pleuræ thickened by plastic deposits, the trocar of a Bowditch's syringe or an exploring-needle might be passed through the liquid stratum and have its point imbedded in the thickened pulmonary pleura, and thus seriously mislead the operator. But apart from this special diagnostic value, and of its great importance in some cases I am well aware, Dieulafoy's aspirator has no advantage over Bowditch's syringe, while it has the disadvantage that, as the barrel of the syringe is small, and the piston necessarily works very tightly, the evacuation of a large collection of fluid is both tedious and fatiguing. Both instruments are, however, alike in this, that when they are used, instead of the fluid being expelled by the forces we have already considered, it is sucked out by a force which varies with the perfection of the vacuum created in the syringe, but which is in all cases quite considerable. When, therefore, all the conditions exist which render

it quite impossible for the parts to return quickly to their normal position—when the lung is tightly bound down, and the chest-wall rigid—it is quite possible, despite Dieulafoy's assertion to the contrary, that an injurious traction may be exerted upon the lung by the forced withdrawal of fluid from the pleural sac. * * *

It must be further asked, in connection with this point, how much advantage attaches to the entire withdrawal of the effusion? It has been held by some that it is undesirable to do so, but I confess to being unable to perceive any good reason for fearing to do it in cases where it is evident, by the return of pulmonary resonance and the development of the vesicular murmur, that the lung is expanding freely to occupy the place of the effusion. In such cases it is undoubtedly possible to withdraw the accumulation by the simple canula, as described. In other instances, where the effusion is serous, but yet the lung is incapable of fully expanding by the mere pressure of the atmospheric air entering its tissue, it may be of service to supplement this by the force of aspiration. But I have not observed in such cases any disadvantage from allowing a portion of the effusion to remain, since it has often been possible, after the excessive distention was removed, to secure the absorption of the remainder as the lung gradually expanded.

In fine, the result of my own experience has been that the greatest value of the "aspirator, with the previous vacuum," in cases of pleural effusion, is a diagnostic one; that in cases of large effusions, when the lung is free to expand, the effusion can be easily, safely, and successfully withdrawn by a simple guarded canula; that in cases where the inability of the lung to expand prevents free escape of the fluid through the canula, it is desirable to employ an exhausting syringe, unless its use is attended by such severe pain as to indicate excessive tension upon the

pulmonary tissues or upon organized adhesions.

BROOKLYN CITY HOSPITAL REPORTS.—*Inhalation of Chloroform in a case of Strychnine Poisoning.*—Patient took five (5) grains of strychnine with suicidal intent.

Before admission to the hospital he was given twenty grains of sulphate of zinc with effect. He had repeated convulsions, and, while being taken from the ambulance, was seized with one of tetanic form, which plainly showed strychnine poisoning. Every muscle was rigid, and tetanus complete. Opisthotonos, irregularity of pulse, varying from 120 to 140 in the minute, with all the accompanying symptoms, were noticeable.

He was immediately placed under the influence of chloroform. The convulsions ceased from the commencement of the anæsthesia, under which the patient was fully kept for three (3) hours. The chloroform was then removed, but the patient did not awake until six (6) hours afterwards—a case of recovery.

Chronic Diarrhæa.—In those cases where the epithelium is stripped from the tongue, and the patient presents the cachexia of the disease, good results have been obtained by the administration of pulv. ipecac, in twelve-grain doses, three (3) times daily, given mid-time between meals to prevent emesis.

This is continued until the stools are of a perfectly serous nature, when the ipecac is discontinued, and

Zinci oxid. gr. iv.

Ext. quassia. gr. vj.
in capsule given three times daily.

Guarana in powder has been used in similar cases with apparently very good cures; but as it is impossible to keep trace of the patient, the permanency of the cure is not established.

Peculiar Injury of Finger.—A somewhat peculiar case was brought to our notice of a machinist, who, while at work, had the end of his index-finger caught in the machinery.

The ungual phalanx was torn off, and attached to it was thirteen inches of the flexor tendon, and muscular connection. No inflammation of the arm ensued.

Night Sweats.—For night sweats of phthisis the combination of extract of belladonna with oxide of zinc :

Belladonnæ ext. gr. $\frac{1}{4}$

Zinci oxid. gr. iv.

is found acceptable.

Excision of portion of Sternum.—

This is a case where the greater portion of the manubrium was excised, by Dr. Spier, for necrosis.

Rupture of Lung.—Patient, seventeen years of age, was suddenly caught and crushed between two cars, resulting in fracture of neck of humerus, and death from emphysema. Autopsy revealed rupture of left lung through apex, four and a half inches in depth. No fractured rib to cause it; but the lungs were filled, and in the sudden pressure the air was not able to escape by the natural passage; a rupture was the consequence.—*N. Y. Med. Record.*

THE ABDOMINAL BRANCHES OF THE PNEUMO-GASTRIC NERVES AND THEIR RELATION TO THE TREATMENT OF CHOLERAIC DISCHARGES.—The subject of the Annual Essay read before the Minn. State Med. Society by H. C. Hand, M.D., (*North-western Med. and Surg. Journal.*) This is an article to which we refer with especial pleasure, since, while it contains a few excellent suggestions, theoretically deduced, it does not leave the domain of facts to enter that of speculation. Epitomizing from the lengthy original, we deem it unnecessary to quote the author's experiments and dissections, as they go mainly to confirm the researches of others. First describing the anatomical distribution of the vagus, he enters into the physiology of that wonderful nerve, limiting his remarks chiefly to its action on the abdominal viscera. The various experiments on the subject, up to date, are carefully cited, and their general results, as well as those of the author's vivi-

sections, which, few as they were, were much interfered with by the meddling of some anti-cruelty people, show pretty evidently the antagonism between the vagus and the great sympathetic, and the increase of secretory action on excitation of the former, as well as the diminution of transudation and gland activity consequent upon section of the pneumo-gastrics. Waller's experiments on the human vagus are referred to, by compression of which, resulting when intense, in a temporary paralysis, he had repeatedly controlled obstinate vomiting; but more than this, Horatio C. Wood, Jr., found that section of that nerve in animals, counteracted the effects of the most powerful emetics and cathartics almost invariably, the autopsy proving the gastric and enteric mucous lining dry and mostly pale.

The two morbid processes, vomiting and diarrhœa, being thus dependent on vagal integrity, the question is raised by Dr. Hand, whether their inordinate continuation ought not to be interrupted, as we are aware that we can do this, by temporary paralysis of those nerve-tracts? The greater influence of the left vagus on the stomach, and of the right on intestinal action would indicate sedation of the former in vomiting, of the latter in choleraic discharges. As to the means of sedation, cold applied to the side of the neck would seem a more effective and preferable measure than Waller's compression, which is at the best difficult to perform; but in as intractable a disease as cholera, would not even a harsher method be justifiable to save life? Section of one vagus is, in animals, not a dangerous operation; indeed, division of both nerves is by no means always fatal, and comparative physiology has failed to point out any greater danger from that operation in man, as cases of traumatic injury of that nerve have confirmed; now, as union of the divided ends is of speedy occurrence, when care is taken to prevent any separation of the extremities, surely another chance for

life ought not to be refused to the patient, dying of intestinal discharge, and section of the right vagus ought to be given a trial, as a last resource in extreme cases. With these few remarks we will close, referring for further information to the interesting original.

PARALYSIS OF THE RADIAL NERVE.

Panas (*Arch. Gen. de Medicine, Gaz. Med. Ital.*, No. 35, 1873, and *Allg. Central Zeitung*) has, after observation of numerous cases of radial paralysis, been unable to agree with the opinion of other physicians that this paralysis is brought about through cold, and is of rheumatic origin, but holds rather that it is due to pressure on the nerve. From seventeen cases he draws the following conclusions:

1. Paralysis of the radial nerve, in most, if not in all cases, is produced by a light persistent pressure on the nerve.
2. This pressure takes place on a superficially situated portion of the nerve, and the paralysis is limited by this portion.
3. The cause of the pressure is usually the weight of the body, more especially the head, for which the arm forms a support.
4. The longer the pressure has been continued, so much the more apparent will be the paralysis.
5. The paralysis comes on after a long and deep sleep.
6. Rapid and severe fatigue, which causes a lethargic sleep, favors the production of this paralysis.
7. Sometimes in slowly developed and progressive cases, the causes are unknown.
8. In thirty cases of radial paralysis which came under the observation of the author in the clinic and his private practice, in none could he discover rheumatism as a cause.
9. The anatomy of the parts as well as the etiology, the physiology, and the symptomatology, point to a mechanical disturbance of nerve function and consequent paralysis.
10. Rheumatic paralysis, due to

cold, does not present the peculiarities afforded by radial paralysis, caused by compression.

11. Electricity cures the most of these paralyzes if the disease is not of long standing, and the nerve, upon which the electric contractility of the muscles depends, has suffered no alteration.

THE EFFECT OF ALCOHOL ON DIGESTION.—In his lectures "On the Functional Derangements of the Liver," recently delivered at the Royal College of Physicians, Dr. Murchison gave the following sketch of the effect of the habitual use of alcohol on digestion: "Gradually the patient is taught by experience to become more careful as to what he eats and drinks. One thing after another he is obliged to give up. First, he renounces malt liquors; then he discovers that Port wine, Madeira, Champagne, and Burgundy disagree, and he betakes himself for a time to 'dry sherry;' but at length this does not suit, and after an interval, during which a trial is made of claret or hock, the patient, probably under medical advice, finds temporary relief from the substitution for wines, of brandy or whisky largely diluted with water. At last, unless he be misled by the fashionable, but to my mind erroneous, doctrine of the present day, that alcohol in one form or another is necessary for digestion, or to enable a man to get through his mental or bodily work, he finds that he enjoys best health when he abstains altogether from wines and spirits, and drinks plain water."—*Student's Journal and Hospital Gazette*.

MENINGITIS TUBERCULOSA.—J. A. Waldenstrom, of Upsala, gives, (*Deutsch Klinik*, 1873, No. 29.) as the two characteristic symptoms to aid in the diagnosis of this disease in early infancy, the vomiting, and the condition of the fontanella. When the former occurs after awakening or during sleep and after

change of position, from lying to sitting, or the reverse, especially shortly after eating, abdominal difficulties being at the same time excluded, it can generally be considered as due to irritation of the great nervous centres and affords a suspicion of tuberculous meningitis.

The other principal aid to the diagnosis in very young infants, the protrusion of the fontanella, is due to the intra-cranial pressure from the effusion into the ventricles. This symptom, which is generally overlooked by the text books, has been constant in all the cases observed by the author, though not always equally easy of detection.

In one case where chronic catarrh of the stomach and bowels, with vomiting and diarrhoea co-existed, he diagnosed the disease by this symptom alone, and though doubted by his colleagues of the Poliklinik, the correctness of his judgment was verified by the autopsy.

The diagnosis without these symptoms may be sufficiently easy to the skilled practitioner, but those less accustomed to diseases of children, will find them useful, especially so as they occur at a period when no knowledge of his or her subjective sensations can be obtained from the little patient.

CHOLERA.—An international "cholera congress," according to the *Eastern Budget*, is to meet at Vienna next month. Among the most important questions to be discussed on this occasion are the following:—1. Is cholera developed in India spontaneously, and is it always produced in other countries by transmission from abroad? 2. Is cholera capable of being transmitted by travelers from one country to another? 3. Can it be transmitted by articles used by cholera patients? 4. Can it be transmitted by provisions? 5. Can it be transmitted by living animals or the

corpses of animals who have died from cholera, merely through the medium of the atmosphere? 6. Has the admission of fresh air to a cholera-producing agent any influence on its contagious or infectious properties? 7. How long is the period of incubation in cases of cholera-infection? 8. Are there any means of disinfection by which the cholera-producing or spreading agent may be made positively harmless, or at least weakened with any prospect of success? 9. Should quarantine establishments, to prevent the spread of cholera, be introduced on rivers, land, or sea? 10. Should permanent or temporary international stations for the study of infectious diseases, and the means of avoiding them, be established?—*London Globe*.

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